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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,435	03/25/2004	Alexander P. Payne	10021.002510 (P0309)	1489
31894	7590	08/21/2006	EXAMINER	
OKAMOTO & BENEDICTO, LLP P.O. BOX 641330 SAN JOSE, CA 95164			THOMAS, BRANDI N	
			ART UNIT	PAPER NUMBER
			2873	

DATE MAILED: 08/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/811,435	PAYNE ET AL.	
	Examiner	Art Unit	
	Brandi N. Thomas	2873	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-12 and 16 is/are rejected.
- 7) ☒ Claim(s) 13-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Detailed Action</u> .                  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mermelstein et al. (US 2002/0141039 A1).

Regarding claim 4, Mermelstein et al. discloses, in figures 3, 4a, and 5a-5c, a movable membrane for light modulation, comprising: a substantially optically active region (52) (section 0058); and a released membrane portion (54) surrounding the optically active region (52) (section 0058), wherein: the substantially optically active portion (52) includes a plurality of gaps (figure 4a) configured to expose a lower surface (section 0058, 0060 and 0065) but does not specifically disclose wherein the optically active portion is circular in shape. However, it would have been obvious to fabricate the invention to include an optically active portion that is circular in shape, since such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art (In re Rose, 105 USPQ 237 (CCPA 1955)). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to fabricate the optically active portion to have a circular shape for the purpose of maintaining the shape of the released membrane.

Regarding claim 5, Mermelstein et al. discloses, in figures 3 and 5a-5c, a movable membrane for light modulation, wherein: the substantially optically active region (52) remains substantially flat while deflected (figures 5a-5c and section 0065).

Regarding claim 6, Mermelstein et al. discloses, in figures 3 and 5a-5c, a movable membrane for light modulation, wherein: an area of the lower surface exposed through the plurality of gaps is substantially equal to an upper surface area (section 0065).

Regarding claim 7, Mermelstein et al. discloses, in figures 3 and 5a-5c, a movable membrane for light modulation, wherein: an optical energy of the lower surface exposed through the plurality of gaps is substantially equal to an upper surface optical energy (section 0065 and 0066).

Regarding claim 8, Mermelstein et al. discloses, in figures 3, 4a, and 5a-5c, a micro electromechanical system (MEMS) device (50) capable of light modulation, the device comprising: an optically active area (52)) that is reflective and configured to be illuminated (section 0058); a non-optically active portion (below active region) between the optically active portion (52 and the support structure (57) (section 0059); and a plurality of gaps (figure 4a) in the optically-active portion (52) (section 0058, 0060, and 0065) but does not specifically disclose a membrane and the optically active region having a circular shape. However, it would have been obvious to fabricate the invention to include an optically active portion that is circular in shape, since such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being with the level of ordinary skill in the art (In re Rose, 105 USPQ 237 (CCPA 1955)). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to fabricate the optically active

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portion to have a circular shape for the purpose of maintaining the shape of the released membrane.

3. Claims 9-12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mermelstein et al. (US 2002/0141039 A1) as applied to claim 8 above, and further in view of Hornbeck (4441791).

Regarding claim 9, Mermelstein et al. discloses the claimed invention but does not specifically disclose the membrane having reflective areas under the plurality of gaps. Hornbeck discloses, in figures 1-4, a micro electromechanical system (MEMS) device, further comprising: a substrate (10) below the membrane having reflective areas under the plurality of gaps (col. 5, lines 39-49). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Mermelstein et al. with the membrane of Hornbeck for the purpose of defining a deformable mirror (col. 2, lines 24-30 and col. 5, lines 39-44).

Regarding claim 10, Mermelstein et al. discloses, in figures 3, 4a, and 5a-5c, a micro electromechanical system (MEMS) device (50), wherein non-optically-active portion (below active region) is substantially larger in area than the optically active portion membrane portion (52) (figure 3).

Regarding claim 11, Mermelstein et al. discloses, in figures 3, 4a, and 5a-5c, a micro electromechanical system (MEMS) device (50) but does not specifically disclose wherein the optically-active membrane portion bends less than the non-optically-active membrane portion when the membrane is controllably deflected. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the optically-active membrane

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portion bends less than the non-optically-active membrane portion when the membrane is controllably deflected for the purpose of the active region becomes excited from the waves continuously passing through, therefore the active region is going to bend less than the non-active region (section 0058 an 0059).

Regarding claim 12, Mermelstein et al. discloses, in figures 3, 4a, and 5a-5c, a micro electromechanical system (MEMS) device (50), wherein the optically active membrane portion remains substantially flat (figure 3).

Regarding claim 16, Mermelstein et al. discloses the claimed invention but does not specifically disclose wherein the membrane comprises a compliant material from a group of compliant materials including polymeric materials, metals, polycrystalline materials, and amorphous materials. Hornbeck discloses a micro electromechanical system (MEMS) device, wherein the membrane comprises a compliant material from a group of compliant materials including polymeric materials, metals, polycrystalline materials, and amorphous materials (col. 2, lines 34-38). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a group of compliant materials including polymeric materials, metals, polycrystalline materials, and amorphous materials for the purpose of their characteristics of withstanding extreme environments.

***Allowable Subject Matter***

4. Claims 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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5. The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim(s), in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in claim(s) 13, wherein the claimed invention comprises wherein the gaps in the optically-active membrane portion are configured so that substantially equal optical energies are reflected from the membrane and from the substrate below the membrane, as claimed.

6. Applicant's arguments with respect to claims 4-16 have been considered but are moot in view of the new ground(s) of rejection. Mermelstein et al. discloses a plurality of gaps in figure 4a.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N. Thomas whose telephone number is 571-272-2341.

The examiner can normally be reached on 7- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
BNT

  
Alicia M Harrington  
Primary Examiner  
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